

What is claimed is:

1 1. A system to refresh a display, the system comprising:  
2 a memory to store at least one image frame such that content of the image frame is  
3 stored in a plurality of memory pages in the memory; and  
4 a display controller in communication with the memory to access the image frame  
5 and to send the image frame one memory page at a time to the display to refresh the  
6 display.

1 2. The system of claim 1 further comprises a processor to perform drawing  
2 operations to generate images for the image frame, the processor marking memory pages  
3 corresponding to regions of the image frame that have been updated.

1 3. The system of claim 2, wherein the display controller sends only the  
2 marked memory pages of the image frame to the display.

1 4. The system of claim 1, wherein the image frame is divided into tiles  
2 representing two-dimensional regions of the image frame, each of the tiles is stored in  
3 one separate memory page.

1 5. The system of claim 1, wherein each of the memory pages has a size of  
2 four Kilobytes.

1 6. The system of claim 1, wherein the image frame is represented by a  
2 configuration where color components of a pixel are deposited in contiguous memory  
3 locations.

sub  
a1

Sub  
a1

1 7. The system of claim 1, wherein the image frame is represented by a  
2 configuration where color components of a pixel are separated and deposited in multiple  
3 color planes.

1 8. A method to refresh a display, the system comprising:  
2 storing at least one image frame such that content of the image frame is stored in a  
3 plurality of memory pages in a memory; and  
4 sending the image frame to the display one memory page at a time to refresh the  
5 display.

1 9. The method of claim 8 further comprises marking memory pages  
2 corresponding to regions of the image frame that have been updated while performing  
3 drawing operations.

1 10. The method of claim 9, further comprises sending only the marked  
2 memory pages of the image frame to the display.

1 11. The method of claim 8 further comprising:  
2 dividing the image frame into tiles representing two-dimensional regions of the  
3 image frame; and  
4 storing each of the tiles in one separate memory page.

1 12. The method of claim 8 further comprises using memory pages of four  
2 Kilobytes in size.

Sub  
a2  
cont

1 13. The method of claim 8 further comprises organizing the image frame  
2 using a configuration where color components of a pixel are deposited in contiguous  
3 memory locations.

1 14. The method of claim 8, further comprises organizing the image frame  
2 using a configuration where color components of a pixel are separated and deposited in  
3 multiple color planes.

1 15. A program embodied on a system-readable medium to refresh a display,  
2 comprising:  
3 a first sub-program to control storing at least one image frame in a memory such  
4 that content of the image frame is stored in a plurality of memory pages in the memory;  
5 and  
6 a second sub-program to access the image frame and to send the image frame one  
7 memory page at a time to the display to refresh the display.

1 16. The program of claim 15, further comprising a third sub-program to mark  
2 memory pages corresponding to regions of the image frame that have been updated while  
3 performing drawing operations.

1 17. The program of claim 16 further comprising a fourth sub-program to send  
2 only the marked memory pages of the image frame to the display.

1 18. The program of claim 15 further comprising:  
2 a third sub-program to divide the image frame into tiles representing  
3 regions of the image frame and to store each tile in a separate memory page.

1 19. The program of claim 15 further comprising:  
2 a third sub-program to organize the image frame using a configuration where  
3 color components of a pixel are deposited in contiguous memory locations.

1 20. The program of claim 15 further comprising:  
2 a third sub-program to organize the image frame using a configuration  
3 where color components of a pixel are separated and deposited in multiple color planes.

add  
a3

add  
ca